

The ^{S506}Smithville PCB

NOVEMBER 1989

Cleanup

MOBILE INCINERATOR WILL DESTROY PCB WASTES

Smithville area residents will soon have their say in the proposed destruction of PCB contamination at the Chemical Waste Management Ltd. storage site at Smithville. An Open House where representatives of Ensco, Inc. and Environment Ontario will discuss the proposed destruction, will be held at the Old Farm Inn, Smithville, November 15.

Next year, at a hearing before the Environmental Assessment Board, the public will have an opportunity to review and comment on the recommended destruction technology. If approval is granted, Ensco, the selected contractor, will be issued a certificate of approval to use mobile high-temperature incineration facilities to destroy the PCB wastes at the site. This process would include monitoring of stack gases to ensure strict adherence to environmental safety standards established by Environment Ontario.

Called a transportable modular incinerator, the system has six basic MWP-2000 process modules which are mounted on flatbed trailers for ready transport. Additional secondary equipment would also be temporarily erected at the site. It uses rotary kiln and secondary combustion chamber technology to destroy toxic wastes in solids, sludges or liquids.

The equipment would be erected on the site, since there are no other facilities for burning PCBs in Ontario.

Alberta has the only other PCB destruction facility in Canada. But it will not accept wastes from other provinces without special

road to contaminated sites or permanently installed at manufacturing facilities.

Depending on the outcome and the length of the hearings, this incineration process could begin next year. Environment Ontario has already taken steps to consolidate all

formers and tanks of liquid PCBs.

The firm also covered a portion of the site with a membrane to prevent rain-water coming in contact with the PCB-contaminated soil thereby minimizing contamination.

Environment Ontario has also addressed the concerns of many Smithville area residents that their drinking water might become contaminated, because a PCB-contaminated ground water plume could move towards the municipal well. Environment Ontario has provided full funding for a 12-kilometre water pipeline from Grimsby to Smithville. The pipeline was completed in the summer of 1988 to replace the municipal well water supply.

The final destruction of the PCBs would be closely monitored by all those involved to ensure no PCBs escape. As well, Environment Ontario would continually monitor ambient air during the high-temperature burn to ensure it meets with environmental safety standards.

This incineration phase of the cleanup is expected to cost about \$13 million.

The overall cleanup cost is estimated to exceed \$20 million.



BEFORE AND AFTER. Top photo shows site before cleanup operations. Bottom photo shows membrane over soil and PCB storage sheds.

permission from the Alberta government.

All equipment used at Smithville would be removed from the site when the PCB destruction is complete.

Ensco Environmental Services Inc. designs, constructs and operates modular incinerators that can be transported over the

PCB-waste materials on the surface of the site.

The ministry hired engineering consultants Proctor and Redfern which secured leaking tanks, drained lagoons containing PCB oil, and cleaned metal previously contaminated by PCBs. The engineering company built a storage building to store electrical trans-

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Ensco Answers Some Questions on the Proposed Transportable Incinerator

Ensco has answered the following questions.

How long will the incineration take?

It takes about four weeks to assemble the equipment, six to nine months for the incineration, and about three to four weeks to decontaminate and disassemble the equipment.

What effect will it have on the Smithville community?

We will be relocating about 25 Ensco employees into the Smithville area for the duration of the project. The monetary impact will be housing and living expenses for these people. Additionally, it is Ensco policy to procure project supplies from local vendors. These supplies consist of hardware, lumber, sand and gravel and fuel. Historically, this volume has been more than \$200,000 per month.

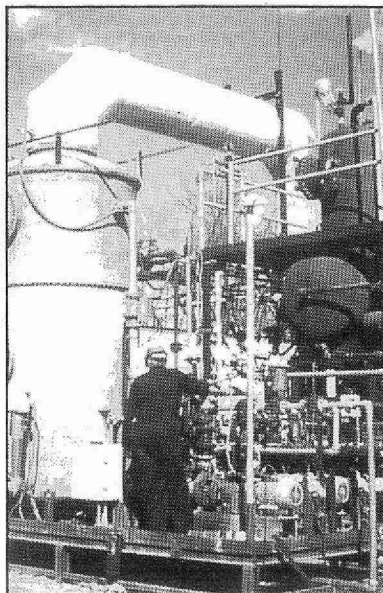
Will the incineration cleanup consume extra energy?

This project has waste PCB oils which will supply a large part of the fuel needed to operate the incinerator. However, when this supply is exhausted, natural gas or fuel oil will be purchased to keep the process functioning. Our first choice fuel requirement for the incinerator burners is natural gas. The second choice is number two fuel oil, similar to diesel. In addition, there will be a small industrial electrical requirement.

Will it mean more jobs for local people?

Ensco will utilize local residents as much as possible

for positions that do not require contact with the waste materials. We must use Ensco employees to operate the incinerator due to the minimum six months that are required for training.



Is it possible on-site workers could contaminate community residents?

We have a very strict health and training program to prevent any person from becoming contaminated. As well as following the guidelines set out by Environment Ontario and U.S. authorities, our employees must also follow our company's policies to ensure they do not come in contact with material. All clothing they wear on site, for example, must remain on site. Workers also shower before they leave the premises.

Will extra land be required?

The actual decontamination activities will be kept on the original CWML storage site. We will not be extending the size of the site. A small section of land south of the site owned by the township

of West Lincoln has been offered to Environment Ontario. If we do use that area, it would only be for parking, office trailers, and clean material storage.

How effective is the transportable incinerator?

It easily surpasses the strict U.S. requirement of destroying the PCBs in the waste. Because of this efficiency, it was the first mobile incinerator to have a permit from the U.S. Environmental Protection Agency allowing its use anywhere in the U.S. for PCB destruction. Since fall 1987, a similar unit has operated successfully in Mississippi destroying dioxins in soil contaminated with Agent Orange. Incineration has been accomplished with no detectable trace of toxins in air emissions.

How does it work?

The incinerator destroys toxic organic compounds through two separate stages of burning: exposure to temperatures of 800 degrees Celsius in a rotary kiln, and then at 1000 degrees Celsius in a secondary combustion chamber.

The high temperatures of the rotary kiln remove the PCBs from the contaminated soil and other materials as they slowly move through the kiln. The materials are then tested to ensure they are decontaminated. The treated soil will be returned to the ground at the site. The other treated materials, such as the metal drums, are then taken to a metal recycler to recoup its scrap value.

An Ensco project was just completed in Chicago, burning soil contaminated with organic toxins. All

treated soil met the cleanup objective.

All the PCBs vaporized off these materials in the rotary kiln are in the form of a gas. This gas is fed directly into a secondary combustion chamber where the extremely high heat completely destroys the PCBs.

The intense heat from the secondary chamber is recovered in a boiler where it is turned into steam to run other incinerator processes, such as air pollution control devices. This makes the transportable incinerator an energy-efficient hazardous waste disposal system. Sophisticated analyzers and instruments carefully monitor every step of the process, shutting it down if anything out of the ordinary is detected.

The system will operate 24 hours a day, seven days a week, with staff working 12-hour shifts.

Are these high temperatures dangerous?

The high heat is contained within steel-shelled, drum-shaped units that measure about 2 metres in diameter and 12 metres long. They are lined with 15 to 23 centimetres of refractory brick. The outside of the kiln and combustion chamber do not get any hotter than 260 degrees Celsius. These furnaces are kept one metre off the ground, far enough that the ground temperature is not affected. Workers can perform their duties comfortably at least one metre away from the units. Standing three metres away, you wouldn't notice any additional heat created by the unit.

What will keep PCBs from escaping into the air?

The transportable incinerator has a three-stage gas scrubbing system which guarantees the highest-quality pollution control. Monitoring by Environment Ontario will prove the effectiveness of this system.

Is there a chance of fire or explosion?

Our own safety precautions and the safety requirements imposed by Ontario's legislation reduce the possibility of any such event. The system itself includes continuous monitoring of 60 operating functions. If there is any failure, automatic shut-offs stop the flow of fuel and PCB wastes into the rotary kiln. The system is thus denied the fuel on which it runs, and it shuts down - preventing a chance of explosion.

What possible emergencies could occur and what would emergency plans be?

To comply with regulations under the Environmental Protection Act, we have submitted to Environment Ontario a detailed description of contingency plans in

the unlikely event of an emergency. This description will be available for the public to study in depth when our application for a certificate of approval is displayed prior to the public hearing.

Basically, the plans reveal how we would contain a tankage leak of PCB-laden material within a diked area, stop the leak and clean the affected area. In addition to emergency procedures, we take preventive measures to minimize any possible danger. For example, if it is necessary for us to store a supply of diesel fuel on site, we will ensure that the tank is in a diked area, located away from the incineration equipment and that personnel are well-equipped and well-versed in containing a spill and/or extinguishing a blaze.

Will the incineration process be noisy?

We will apply the same mufflers as we did to the system that ran without complaint 18 metres from residential housing. In fact, you can talk, and be heard, standing beside the noisiest equipment. There will be very little truck traffic. It won't be like a rock quarry or gravel pit with heavy, noisy traffic.

Will it smell?

No more than it does now. There will be some earth-moving equipment used on the site and someone walking by may get the occasional diesel exhaust fumes from this equipment. Other than that, there will be no particular smell. All excavated material will be kept in a tent, so the PCB smell will not be increased. The incinerator does not emit any odor. The harmless discharge from the smokestack is a colorless, odorless, steam plume.

Will it be safe to drive past?

Yes, and it will be safe to live beside it. Another MWP-2000 transportable incinerator which just finished treating 21,000 tonnes of hazardous waste at a site near Chicago, Illinois, operated within 18 metres of a home, with no adverse results.

What will the site look like while this incineration is underway?

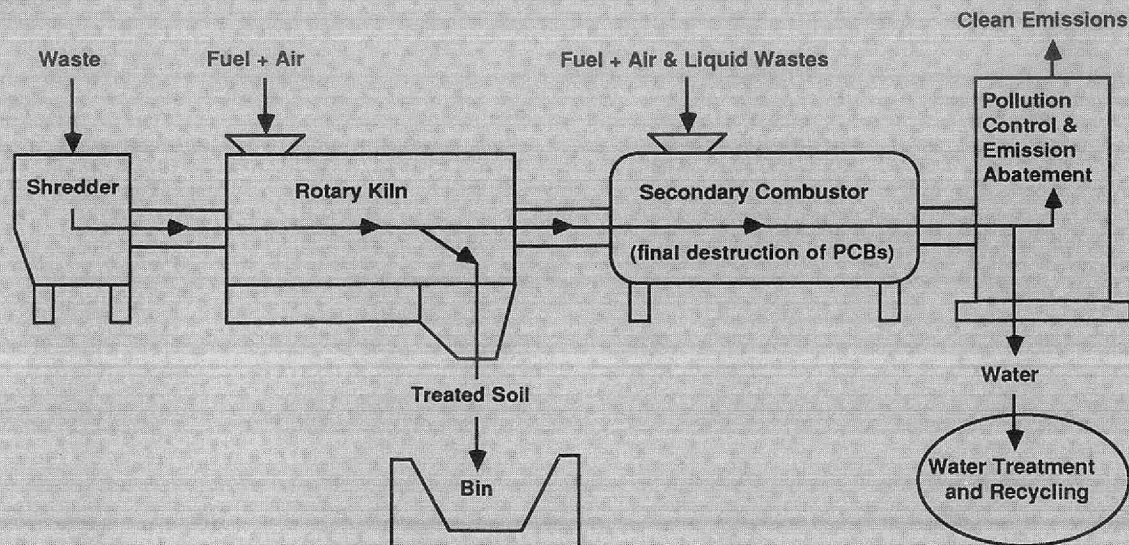
Apart from the steam rising out of the 12-metre stack, there will be little to see. Under normal, fair weather conditions, that cloud of

low temperature steam will rise and become part of the atmosphere 20 to 40 metres in the air.

What will the site look like when you are finished?

It will be green with grass. At this point it has not been decided whether the two buildings, after they are decontaminated, will remain on site or not. Other than the buildings, the area will look similar to the way it did before it became a waste site. The transformers, capacitors and drums will be put through the rotary kiln and the PCBs destroyed. The decontaminated metal, after having been proven to be PCB-free, will be taken to a scrap recycler. After the soil has been decontaminated, and tests confirm it is PCB-free, then it will be like sterile potting soil and returned to the ground. We will sod the ground before we leave the site.

In a multistep process, the incinerator safely destroys PCB contaminated waste. Such incineration is preferred over storage and other waste treatment techniques because it provides *permanent destruction of the waste.*



STRICT GOVERNMENT REGULATIONS PROTECT THE PUBLIC

The incineration technology proposed to destroy the PCBs at the Smithville site must comply with Ontario legislation made law in 1986. The proposed incineration equipment is defined in the Ontario Regulation 148/86, under the Environmental Protection Act, as a Class 1 mobile PCB destruction facility waste management system.

The regulation imposes strict standards on the location, maintenance and operation of such equipment. Its purpose is to ensure the safe, successful use of incineration technology. The creation of the legislation was a lengthy process in which the public has played a major role.

The process began with the drafting of a discussion paper which Environment Ontario distributed to the public in 1983. A task force was formed to meet with the various public interest groups, municipalities, industry and government representatives to create a ministry proposal based on the feedback. The revised proposal was sent to a mailing list of more than 800 names. It was also discussed at 18 'open houses' Environment Ontario held to present information on PCBs and the technology to destroy them. Approximately 455 people attended these events.

The task force incorporated this additional feedback, then further revised the proposal. The result was the "Preliminary Hearing Document on Proposals for the Regulation of Mobile PCB Destruction Facilities in Ontario." A Royal Com-

mission for a full public inquiry was then assigned to deal with this new document.

The impartial commission held a public inquiry which ran for six months. It heard presentations from about 90 Canadian and American representatives of groups, including public interest groups, interested and/or involved in this area. These presentations included representatives of the Association of Municipalities of Ontario, Ontario universities, federal and provincial governments, the U.S. Environmental Protection Agency, the U.S. Environmental Defense Fund, various industrial associations in Ontario, consulting companies, medical experts and a number of companies involved in PCB destruction.

The commission then reviewed 13,870 pages of transcripts and 185 exhibits presented by 120 witnesses at the hearings. Finally it made its recommendations to the Environment Ontario in June 1985.

The following September, the government announced it would incorporate these recommendations into the regulatory and administrative framework — with one major change. The government would go beyond the recommendations of the commission to encourage public participation. It would legislate that public hearings must be held to review the technology to be used and the site selected. The government also approved more detailed measures than the commission recommended. These would ensure public awareness

and involve the community in the application of destruction technologies.

"The lengthy public inquiry process and the ministry's response to an impartial board's recommendations have resulted in very stringent regulations for mobile PCB destruction facilities," says Gord Donnelly, senior combustion/incineration engineer with the Waste Management Branch, Environment Ontario.

These regulations cover, for example:

- *the emission from the incinerator;*
- *the disposal of solid wastes from the incinerator;*
- *the treatment of cooling water or any other waste water from the operation;*
- *the detailed testing that must be carried out to*

ensure the operation is safe and effective;

- *thorough and frequent inspections of the equipment;*
- *detailed, written record keeping;*
- *constant supervision of the operation and site security;*

The legislation also incorporates a very detailed form to be used by a company in applying for a certificate of approval to locate and operate a Class 1 mobile PCB destruction system. The applicant must provide specific information on the proposed operation, including both a contingency plan to deal with on-site emergencies and a very detailed data quality assurance plan to document the effectiveness of the PCB cleanup.

Site Program

In August, 1985, PCBs were detected off-site by a local environmental group. This concern led to grid testing and confirmation by the Ontario Ministry of the Environment of the presence of free PCBs in a lagoon on the site. Emergency clean up activities began in the Fall of 1985. The Proctor and Redfern Group (P&R) was retained by the ministry to investigate, provide technical recommendations and manage the PCB cleanup activities.

The overall program for cleanup of the Smithville was conceived to be carried out in three phases:

- 1 securing the site against further loss, leakage or escape of PCBs from the CWML property;
- 2 cleanup of PCB wastes on the site, and establishing a secure interim storage facility to hold them pending destruction;
- 3 destruction of PCB wastes on the site and restoration of the property for future use.

Hydrogeological studies carried out at and beyond the end of Phase 2 activities have established the presence of PCB contamination in the bedrock underlying the site. This has led to remedial cleanup of PCB contamination in bedrock.

REMOVING PCBs FROM UNDERGROUND

In addition to the incineration of above ground PCBs, the decontamination of the underground bedrock is another major aspect of the Smithville cleanup. Often referred to as the fourth phase of the cleanup, removing PCBs in the bedrock poses special challenges.

In November 1986, Environment Ontario also arranged to have four test wells, called boreholes, drilled near the site for evaluating and monitoring the threat of PCB contamination of the area's water supply. In February 1987, a heavy, oily material was found at the bottom of a borehole located just east of the site. Analysis of the oil revealed a high concentration of PCBs.

A very detailed drilling program was carried out to learn the extent of that oil, where it is located and its source. It was estimated that the oil had spread over an area slightly larger than a football field — about 70 by 150 metres. It was also determined that the oil came from a former lagoon containing PCB oil at the Smithville site. The oil in the lagoon seeped through the 4.5 metres (15 ft.) of surface clay, into the bedrock underneath. Ministry consultants believe there are about 30,000 litres of contaminated oil stuck in the upper bedrock, mostly between 4.5 and 9.0 metres (15 and 30 ft.) below surface.

In addition to this known body of oil, the natural flow of groundwater has dissolved some of the oil and carried it away through fractures in the bedrock. A dissolved zone

of chemical contaminants has been spread by groundwater flow over a larger area in the bedrock.

The detection of the contaminants south of the site led to the decision to abandon use of Smithville's municipal well No. 2 and the replacement by Environment Ontario of Smithville's municipal water supply with a water pipeline from Grimsby.

This analysis helps keep track of the spread of the body of oil and its dissolved components. So far, there has been no sign of any significant movement of the body of oil. There is evidence that the dissolved components are spreading.

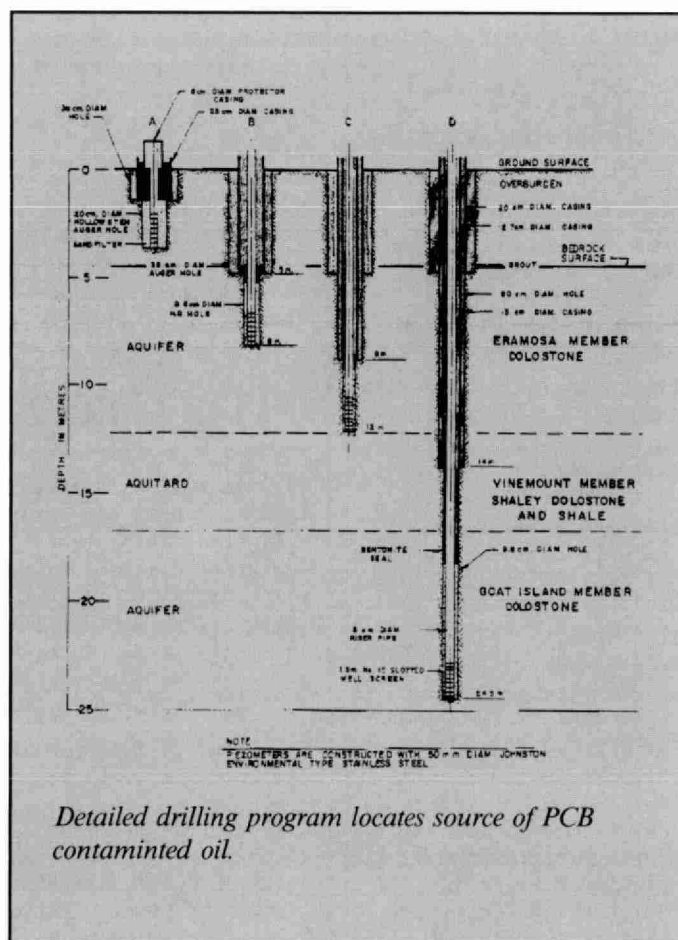
Remediation of the PCB contaminated bedrock is a complex challenge. The first step is to learn more about that contamination.

wells (about 9 m or 30 feet) located in the area are being pumped to attempt to reverse the flow of the dissolved contaminants.

The presence of oil in the pumped groundwater also helps to reduce the quantity of contaminated oil in the bedrock, but is not expected to remove a significant volume of the oil.

Environment Ontario funded a water treatment plant which is now in operation. The plant discharges to the sewer system which, via a pumping station, discharges to the Smithville lagoons.

Information from this pumping and treatment program is being used to assist in the evaluation of the most effective long-term clean up procedures.



Detailed drilling program locates source of PCB contaminated oil.

Today, rings of monitoring boreholes are being regularly analyzed. Water samples from the boreholes are obtained and analyzed at Environment Ontario's laboratories.

In the meantime, Environment Ontario has implemented a method to minimize and control the spread of the dissolved contaminants. A series of eight shallow bedrock

Open House & Public Meeting PCB Incineration

Environment Ontario invites residents to attend an open house and public meeting concerning PCB incineration on the Chemical Waste Management Ltd. site near Smithville.

Representatives from Environment Ontario and Ensco, Inc.; project engineers from The Proctor & Redfern Group; Chemical Waste Management Liaison Committee members and representatives from the Township of West Lincoln will be at the open house and public meeting to answer any questions pertaining to the PCB waste disposal site.

You are invited to come out and learn more about
the cleanup of the site and incineration process.

Wednesday, November 15, 1989

Open House 2:00 p.m. - 7:00 p.m. Public Meeting 7:30 p.m.
Old Farm Inn, 214 West Street, Smithville

We will be there with our consultants to answer your questions.

For further information, please contact Blair Hansler, Environment Ontario at
(416) 521-7640, or John Steele, Environment Ontario at (416) 323-4337.



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Chemical Waste Management Liaison Committee

The Chemical Waste Management Liaison Committee became the main communications link with the community of Smithville and with the interested organizations and nearby neighbors.

The liaison committee is a forum for the members to present their views and desires. They provide input for the decisions.

Committee Members

Neil Switzer - *Chairman of the Liaison Committee*
Joan Packham - *Mayor*
Dorothy Abrams - *Alderman*
Ed Fulford - *Alderman*
John Mayes - *Environment Ontario*
Ken Durham - *Help Eliminate Landfill Pollution (H.E.L.P.)*
Herb Schnick - *Help Eliminate Landfill Pollution (H.E.L.P.)*
Jennifer Oke - *Citizens Against Landfill (CALF)*
Pat Potter - *Netforce*

Dr. P. Boersma - *West Lincoln Chamber of Commerce*
Ian Brindle - *Netforce*
Allard Colyn - *Private Citizen*
Marla Cords - *Private Citizen*
Carmen Sommer - *Private Citizen*

Participants

Charles Street - *Water and Sewage Systems*
Bill Stiebel - *Four Elements Inc.*
Bob Caton - *Concord Scientific*
Stephen Garrod - *Township's Solicitor*
Elsie Koop - *Secretary for the Citizen Liaison Committee.*
Boris Boyko - *Environment Ontario*
Roger Crawford - *Environment Ontario*
Blair Hansler - *Environment Ontario*
William Blackport - *Environment Ontario*
Wilfred Ng - *Environment Ontario*
Peter Beukema - *Proctor & Redfern*
Bill Goodings - *Proctor & Redfern*
Doug White - *Proctor & Redfern*
John McNamara - *Region Niagara*
Ed Meyer - *Health Unit St. Catharines*